Advanced Exploration Systems Program

Human Exploration And Operations Mission Directorate (HEOMD)

ABSTRACT

NASA's Advanced Exploration Systems (AES) division is pioneering innovative approaches and public-private partnerships to rapidly develop prototype systems, advance key capabilities, and validate operational concepts for future human missions beyond Earth orbit. AES activities are related to crew mobility, habitation, vehicle systems, robotic precursors, and foundational systems for deep space, These activities are strongly coupled with future vehicle development while advancing critical competencies at the NASA centers.

AES infuses new technologies developed by the Space Technology Mission Directorate and partners with the Science Mission Directorate to address Strategic Knowledge Gaps for multiple destinations.

ANTICIPATED BENEFITS

To NASA funded missions:

AES activities reduce risk and improve affordability of deep-space mission elements. In addition to developing building blocks for future missions, AES is exploring innovative ways to drive a rapid pace of progress, streamline project management, and use limited resources, the NASA workforce, and citizen innovators more effectively.

To NASA unfunded & planned missions:

AES activities reduce risk and improve affordability of deep-space mission elements. In addition to developing building blocks for future missions, AES is exploring innovative ways to drive a rapid pace of progress, streamline project management, and use limited resources, the NASA workforce, and citizen innovators more effectively.

To other government agencies:

AES partners with other government agencies to leverage new technologies, reduce risk, and reduce cost. AES has active

Collage depicting several activities within AES

Table of Contents

Management Team

Program Director:

- Jason Crusan

collaborations with other government agencies, such as the Department of Energy, DARPA,and the NAVY, on several projects that aid both partners to advance the state of the art.

To the commercial space industry:

AES develops technologies that may be adopted by the commercial space industry to create new businesses, products, services, and jobs. AES leads several public-private partnerships with the commercial sector, spurring economic growth in new space markets.

To the nation:

In addition to developing the building blocks for future human and robotic missions into deep space, AES is exploring innovative ways to drive rapid progress and streamline project management. Using limited resources, the NASA workforce, and citizen innovators, AES is supporting NASA's efforts maintain U.S. leadership in space.

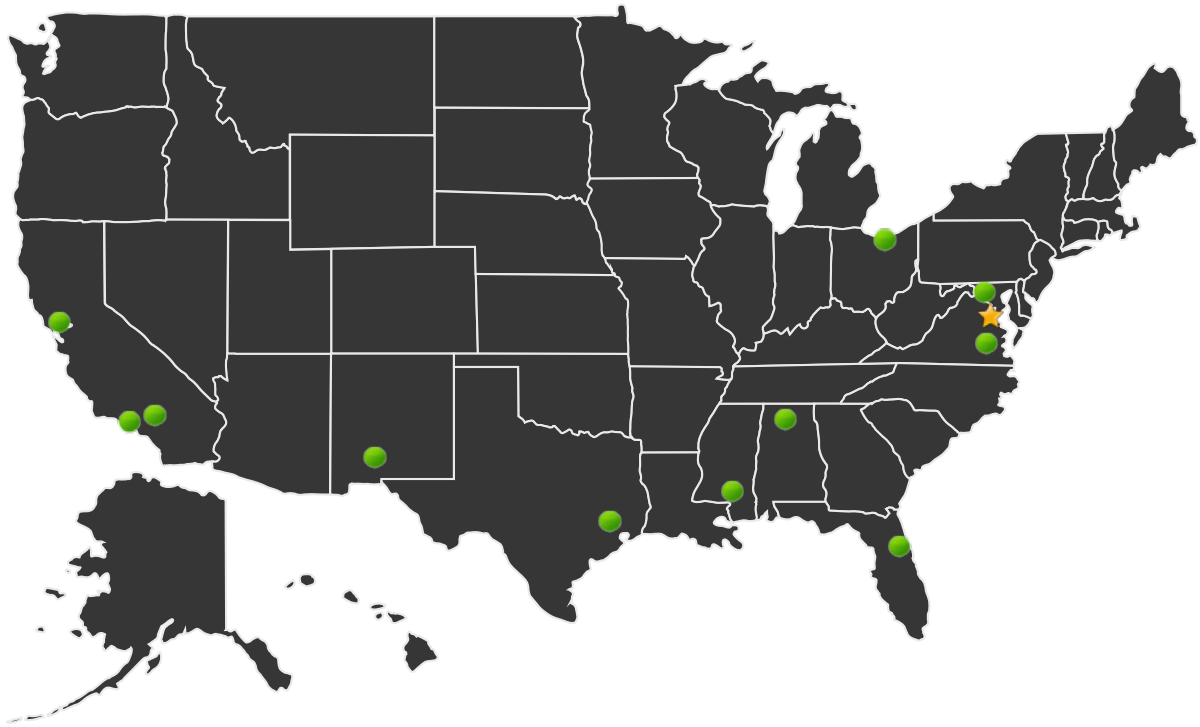
DETAILED DESCRIPTION

AES projects target high-priority capabilities needed for human exploration such as crew mobility, habitation, vehicle systems, robotic precursors, and foundational systems for deep-space. Early integration and testing of prototype systems will reduce risk and improve affordability of deep-space mission elements. The prototype systems developed in AES are demonstrated in ground-based test beds, field tests, underwater tests, flight experiments on the International Space Station (ISS), and deep-space missions. In addition to developing building blocks for future missions, AES is exploring innovative ways to drive a rapid pace of progress, streamline project management, and use limited resources, the NASA workforce, and citizen innovators more effectively.

Advanced Exploration Systems Program

Human Exploration And Operations Mission Directorate (HEOMD)

U.S. WORK LOCATIONS AND KEY PARTNERS



U.S. States With Work

Lead Center:
NASA Headquarters

Supporting Centers:

- Ames Research Center
- Armstrong Flight Research Center
- Glenn Research Center
- Goddard Space Flight Center
- Jet Propulsion Laboratory
- Johnson Space Center
- Kennedy Space Center
- Langley Research Center
- Marshall Space Flight Center
- NASA Headquarters
- Stennis Space Center
- White Sands Test Facility

LATEST SUCCESS STORY

3D Printing on the International Space Station: A Key Step to Pioneering Sustainable Exploration Missions

PROGRAM LIBRARY

Success Stories

- 3D Printing on the International Space Station: A Key Step to Pioneering Sustainable Exploration Missions
  - (http://techport.nasa.gov:80/file/18368)